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EXAMINER	
HUYNH, KIM NGOC	

ART UNIT	PAPER NUMBER
2182	13

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/682,060	Applicant(s) GAREIS ET AL.	
	Examiner Kim Huynh	Art Unit 2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *RCE filed 1/29/04* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-5,7-11,13-17,19-22 and 24-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-5,7-11,13-17,19-22 and 24-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *29 January 2004* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/29/04 has been entered.

Drawings

2. The drawing received on 1/29/04 is approved.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 2-5,7-11,13-17,19-22 and 24-47 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

b. Claims 2, 3, 7, 13, 19, 24, 25 and 28 are rejected under 35 U.S.C. 112, first paragraph, because the specification discloses a controller 114 for controlling the respective switches 148 to configure pin 112 to perform a variety of functions/modes. The DAC is used by the SPI to set the reference voltage of the comparator 152, comparator actually perform the converting of analog input from pin 112 to digital form. In the case pin 112 is to perform as analog output, DAC 152 is set to connect to pin 112 to convert analog input from I/O bus 160 and to convert to analog output at pin 112. On the other hand, for operating pin 112 at analog output mode, the switch 148 is closed connecting the DAC to the pin.

However, the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to the invention commensurate in scope with the claims of 1) a port for configuring a pin and a comparator configured to provide an output to a processor or 2) a control circuit having a single DAC to implement the various logic with the specific conditions on the connector pin. The claims are currently recited covers every conceivable means for achieving the stated purpose while the specification disclosed at most only those means known to the inventor.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 2-5,7-11,13-17,19-22 and 24-47 are also rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claims 2, 4, 10, 11, 14, 16, 20 and 22 are in Markush format. Claims 2, 4, 10, 11, 14, 16, 20 and 22 are rejected because they use the term "comprising" instead of "consisting of" since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired.

Alternative expressions are permitted if they present no uncertainty or ambiguity with respect to the question of scope or clarity of the claims; one acceptable form of alternative expression, which is commonly referred to as a Markush group, recites members as being "selected from the group consisting of A, B and C." See Ex parte Markush, 1925 C.D. 126 (Comm'r Pat. 1925). However, it is improper to use the term "comprising" instead of "consisting of." Ex parte Dotter, 12 USPQ 382 (Bd. App. 1931). See MPEP 2173.05(h).

b. Claims 2, 3, 7, 13, 19, 24, 25, and 28 are rejected as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: there is no nexus between the port/pin and the comparator/processor. It is unclear how the port and pin are related to the comparator and the processor recited in the newly added limitation. Claims 2, 3, 7, 13, 19, 24, 25 and 28 as recited do not clearly set out the logical operation of the pin, the port, the comparator and the processor and how these element are operating to control the configuration of the I/O module connector pin.

Furthermore, claims 25 and 28 fail to provide the cooperative relationship between the control circuit, the switches and a DAC in order to implement the various logic with specific values and conditions as claimed.

Though the specification provides a dictionary for the claims, and the claims may be broader than the claims, the claims must be complete and self consistent so that the functional relationships between all of the elements/steps are clearly recited. The

sequential logical operation of the elements working cooperatively must be clearly recited in the claims.

7. The following rejections are made based on the examiner's best interpretation of the claims in light of the 35 USC 112 rejection.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

9. Claims 3, 7,19 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Chiriatti (US 4,952,934).

Chiriatti discloses a control circuit and a method for configuring an I/O module connector pin (OUT), the circuit having at least one port and at least one switch S1-S4 controlled by the port (output from state machine 3 to control the switches S1-S4), a comparator 2 for providing an output to a processor 3.

10. Claims 2, 4-5, 8-11, 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Piasecki et al. (US 6,509,758 B2).

Piasecki discloses (Figs. 1-2) a control circuit for configuring an I/O module connector pin 12 , the circuit having at least one port (50-64) controlling a configuration of the pin 12 to be either high input, output, high impedance or a specific voltage value (col. 5, l. 50 through col. 6, l. 18 and col. 6, l. 51 through col. 9, l. 9), at least one switch controlled by the port (each of the inverter, NOR, and NAND function as a solid state switch), a comparator 25 for providing an output to a processor 18. Please note the microprocessor 18 drives the I/O contact pad 12 to a logic level and verifies with the comparator 25 to determined if the level is within a predetermined limit (col. 8, l. 65 through col. 9, l. 9); therefore the output CPout of the comparator 25 must be coupled to the processor to perform such determination).

Piasecki also discloses that the energization state of each port controlling a respective state of at least one switch (see Fig. 2, controlling signals 50-64 controlling the state of switches 72-88).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

12. Claims 13-17, 25-27, 28-31, and 32-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Piasecki et al. (US 6,509,758 B2) in view of applicant's admitted prior art (background, paragraphs 2 and 20).

a. Claims 13-17, Piasecki discloses (Figs. 1-2) a control circuit and a method for configuring an I/O module connector pin 12 as discussed above except for the use of the I/O module in a system environment. However, it is conventional and as admitted by applicant (paragraph 2) that I/O modules are used in conjunction with devices such as programmable logic device or computer system to carry out the input output function; therefore it would have been obvious to one having ordinary skill in the art to utilize the I/O modules of Piasecki in a computer system in order to take advantage of the flexibility of the I/O module which can accommodate both digital and analog signals (Piasecki, col. 2, ll. 9-20).

b. Claims 25-26 and 28-31, Piasecki discloses (Figs. 1-2) a control circuit and a method for configuring an I/O module connector pin 12 as discussed above except for the use of a single DAC for a the connector pin to implement various specific logic. Please note Piasecki discloses that a single or various DAC can be implemented for the operation of the I/O module (col. 11, ll. 20-23). It would have been obvious to one having ordinary skill in the art to utilize either a single or multiple DAC as suggested by Piasecki to implement the conversion of the digital to analog depending on the operational capability between the processor and of the DAC and the compatibility between the data bus width of the processor and of the DAC.

As for the specific logic implemented, please note Piasecki discloses the I/O module is capable of implement various logic: low logic, high impedance, pull up, pulldigital or analog I/O with various voltage range (col. 5, l. 50 through col. 6, l. 18 and col. 6, l. 51 through col. 9, l. 9). The limitation single DAC in a control circuit to

implement the various logic with specific values and conditions as claimed is not limiting. It would have been obvious to one having ordinary skill in the art at the time the invention was made to implement any logic/value of the input pin as deemed necessary and compatible with the requirement of the device connected to the I/O module to maintain flexibility of the I/O module absent persuasive evidence that the particular logic was significant (see applicant's own admission, paragraph 20).

c. Claims 32-47, Piasecki does not explicitly disclose the processor is configure to send a message corresponding to the output via an I/O bus. However, Piasecki discloses the comparator is used to perform testing of the amplitudes of the I/O pins and provide pass or fail condition (col. 9, ll. 1-23). As noted above, the I/O module of Piasecki would be used in a computer system and I/O bus is an inherent feature of such a system. Therefore it would have been obvious to one having ordinary skill in the art to realize that the processor 18 would be connect to an I/O bus in order to carry out the signal to indicate the result of the test to the system it is connected to.

The comparator 25 is used to perform a SCAN test to measure the signal amplitudes of the I/O pin and provide a pass or fail condition of the I/O contact pin 12 (back biased power).

Response to Arguments

13. Applicant's arguments, filed 1/29/04 have been considered but are moot in view of the new ground(s) of rejection necessitated by the amendment.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kim Huynh whose telephone number is (703) 308-1678.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Kim Huynh
Primary Examiner
Art Unit 2182

KH
February 13, 2004